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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/745,914 | 12/22/2000 | Antonius Henricus Maria Raaijmakers | PHN 17,819 | 2618 |
| 24737 | 7590 | 09/08/2004 | EXAMINER CHUNG, DAVID Y | |
| PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510 | | | ART UNIT 2871 | |

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/745,914

Applicant(s)

RAAIJMAKERS ET AL.

Examiner

David Y. Chung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1 and 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Bird et al. (Sensors and Actuators 1995) in further view of Tanaka (JP 01-245226).

As to claim 1, Bird et al. discloses an image sensor pixel comprising a photosensitive element and a switching element. See figure 3. The photosensitive element and switching element comprise a layer of ITO formed over a layer of amorphous silicon. A silicon nitride layer covers the ITO layer at least partially. Since the silicon nitride layer covers the ITO layer, the ITO layer must be deposited prior to the silicon nitride layer.

Bird et al. does not disclose an intermediate layer of silicon oxide between the ITO layer and silicon nitride layer so that the switching element is completely shielded during manufacture. However, Tanaka et al. teaches forming a silicon oxide layer between an ITO layer and a silicon nitride layer in order to prevent the ITO layer from being reduced. See abstract. Note in figures 1 and 2, the silicon oxide layer 7 formed

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between the ITO layer 6 and silicon nitride layer 13. It would have been obvious to one of ordinary skill in the art at the time of invention to form an intermediate silicon oxide layer between the ITO layer and silicon nitride layer in figure 3 of Bird et al. in order to prevent the ITO layer from being reduced.

As to claim 2, Bird et al. does not suggest using the disclosed image sensor as a fingerprint sensor. However, it would have been obvious to one of ordinary skill in the art at the time of invention to use the image sensor disclosed by Bird et al. as a fingerprint sensor. The good quality images that can be obtained by the disclosed image sensor array make it well suited for achieving the level of detail and accuracy required by a fingerprint sensor. See page 444.

2. Claims 4-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Bird et al. (Sensors and Actuators 1995) and Tanaka (JP 01-245226) as applied to claim 1 above and in further view of Tran et al. (U.S. 5,135,581).

As to claim 4, Bird et al. does not disclose a doped ITO layer. Tran et al. teaches doping transparent conductive oxides such as ITO with a stabilizing gas such as H₂. This reduces and stabilizes the resistivity and absorption characteristics of conductive oxide compositions formed at low temperatures. See column 3, lines 25-42. Tran et al. teaches depositing a conductive oxide onto photosensitive material at low temperatures to prevent diffusion of the oxide into the photosensitive material. See column 1, lines

54-65. It would have been obvious to one of ordinary skill in the art at the time of invention to dope the ITO layer in figure 3 of Bird et al. with a stabilizing gas in order to reduce and stabilize the resistivity and absorption characteristics.

Bird et al. does not disclose forming the silicon nitride layer using chemical vapor deposition. However, chemical vapor deposition (CVD) was a conventional technique that was well known for being cost-effective and reliable. It would have been obvious to one of ordinary skill in the art at the time of invention to form the silicon nitride layer using chemical vapor deposition because it was cost-effective and reliable.

As to claim 5, Tanaka et al. discloses forming the silicon oxide layer prior to forming the silicon nitride layer. See abstract and figure 1.

As to claim 6, Tanaka et al. teaches completely covering the ITO layer with the silicon oxide layer. Therefore, the ITO layer would be protected during manufacture of the silicon nitride layer.

Response to Arguments

Applicant's arguments filed April 26, 2004 have been fully considered but they are not persuasive. Examiner respectfully disagrees with applicant's assertion that Tanaka teaches away from that which is taught by Bird. Examiner sees no suggestion in Bird that only a portion of the ITO layer is appropriate for deposition of a silicon oxide layer. Examiner also respectfully disagrees with applicant's assertion that Tanaka

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teaches away from the claimed invention. Examiner submits that a silicon oxide layer with the same pattern as the ITO layer shown in figure 3 of Bird would completely shield the switching diode SD during manufacture as required by the claimed invention.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Chung whose telephone number is (571) 272-2288. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:00 pm.

David Chung
GAU 2871
09/06/04


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800